

Research paper

Satisfaction of intensive care unit patients linked to clinical and organisational factors: A cross-sectional multicentre study



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A B S T R A C T

Background: The satisfaction of critical care patients with the nursing care they receive is a key indicator of the quality of hospital care.

Objectives: The objectives of this study were to analyse the level of satisfaction of critical care patients in relation to the nursing care received and to determine the relationship between the level of satisfaction and sociodemographic, clinical, and organisational variables.

Design: This was a prospective, descriptive correlational study.

Setting and methods: The population consisted of all patients discharged from the intensive care units (ICUs) of 19 hospitals in Spain between December 2018 and December 2019. The level of satisfaction was measured using the validated Nursing Intensive Care Satisfaction Scale, and sociodemographic, clinical, and organisational data were collected.

Results: Participants' mean age ($n = 677$) was 59.7 (standard deviation: 16.1), and 62.8% of them were men ($n = 426$). Satisfaction with the nursing care received was 5.66 (SD: 0.68) out of a possible 6. The score for overall satisfaction presented statistically significant relationships with the hours of mechanical ventilation ($p = 0.034$), with the participant's perception of own health status ($p = 0.01$), with the participant's perceived degree of own recovery ($p = 0.01$), with the hospital's complexity level ($p = 0.002$), with the type of hospital ($p = 0.005$), and with the type of ICU ($p = 0.004$). Finally, the logistic regression model shows that the Nursing Intensive Care Satisfaction Scale score was not linked to age or sex but did have a statistically significant relationship with the perceived degree of recovery ($p < 0.001$) and the type of ICU ($p = < 0.001$). The variables that predicted satisfaction were age, degree of recovery, and the type of ICU.

Conclusion: Several studies show that patient satisfaction is related to the patient's perceived health status and perceived degree of recovery, a finding that is confirmed in our study. Our study moves beyond these outcomes to show that the hours of mechanical ventilation and the characteristics of the hospital also have a significant relationship with patients' satisfaction.

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1. Introduction

Patient satisfaction is a complex and multidimensional concept.^{1–5} Several researchers argue that patients' satisfaction with nursing care is the best predictor of patients' overall satisfaction with hospitalisation and is therefore an important goal of any

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healthcare organisation.^{6–8} Consequently, patient satisfaction with nursing care has become a key measure of the quality of hospital care.^{1,5,9,10}

Patients admitted to intensive care units (ICUs) conclude that nursing care is satisfactory when it is both humanistic and scientific, is dispensed continuously, and is aimed at providing patients with safety, well-being, and trust.^{11,12}

1.1. Background

The needs of the critical patient are not only biological or physical but also linked to their experiences, values, beliefs, and culture.¹³ Therefore, care must provide physical, psychological, spiritual, and social safety in a personalised, humanised, and ethical way that is oriented to understanding the person holistically.^{11,12} To provide quality care, nurses need to acquire competencies related to interpersonal skills and attitudes (including verbal and nonverbal communication) and the relationship with the patient, the family, and other professionals. Doing so from a perspective of empathy makes it possible to treat the person within the person's own subjective experience.^{3,14–16}

Patient satisfaction is a measure of the quality of patient-centred nursing care.^{17,18} Questionnaires are the most commonly used instruments for measuring the quality of nursing care or satisfaction with nursing care, and patient opinions are the best source of information.¹⁹ Validated scales include The Risser Patient Satisfaction Scale (RPSS),²⁰ the Caring Assessment Instrument (CARE-Q),²¹ The Monica–Oberst Patient Satisfaction Scale (LOPPS),^{22,23} the Service Quality (SERVQUAL),²⁴ the Critical Care Patient Satisfaction Survey,²⁵ the Newcastle Satisfaction with Nursing Scale (NSNS),²⁶ the Consumer Emergency Care Satisfaction Scale (CECSS),²⁷ the Patient Satisfaction with Nursing Care Quality Questionnaire (PSNCQQ),²⁸ the Patient's Assessment of Quality Scale–Acute Care Version (PAQS-ACV),²⁹ and the Nursing Intensive Care Satisfaction Scale (NICSS).^{30,31} However, only the NICSS incorporates the critically ill patient's perspective both in terms of design (content) and validation.^{30–32}

Numerous researchers^{14,17,33–35} have explored the relationship between patient satisfaction and sociodemographic and clinical variables, such as age, sex, level of education, employment status, length of ICU stay, and perception of health status. However, most of the published studies have been carried out in a single centre and few have explored the factors related to ICU organisation. Two systematic reviews report that the effect of sociodemographic and

clinical factors is equivocal except for the positive association between age and satisfaction level.^{3,4}

2. The study

2.1. Aims

The aim of this study was to explore satisfaction among ICU patients with the nursing care received and the potential relationship between satisfaction and sociodemographic, clinical, and organisational variables.

2.2. Design

This was a multicentre, prospective, descriptive correlational study that forms part of a larger investigation in which we first analysed the psychometric properties of the NICSS.

2.3. Participants

Nineteen hospitals in Spain participated in the study: 15 public hospitals—5 secondary level and 10 tertiary level—and four private hospitals—three secondary level and one tertiary level—according to the World Health Organization (WHO) definition.³⁶ The nurse-to-patient ratio was 1:2, except in two of the hospitals (10.5%), where it was 1:1.

Nonprobabilistic and consecutive sampling was employed. Inclusion criteria were patients (i) oriented to person, place, and time and (ii) able to read and write. Exclusion criterion was patients (i) discharged to another hospital or directly to home.

2.4. Data collection

Once the patient had been discharged from the ICU and within a period not exceeding 48 h, the principal investigator of each participating ICU visited the patient's hospital room to explain the purpose of the study and invite the patient to participate. After receiving the patient's agreement to participate, the patient signed the informed consent form. The collaborating researcher then left the instruments with the patient and returned to collect them 24 h later. The researchers who delivered the questionnaire had no direct relationship with the patient.

Two self-administered instruments were used for data collection. The first instrument contained 13 questions about socio-demographic information (age, sex, marital status, and education level), clinical data (length of ICU stay, hours spent on mechanical ventilation, perceived health status from 1: terrible to 10: excellent, perceived degree of recovery from 1: "I haven't improved at all" to 10: "I've fully recovered"), and organisational data (complexity level, hospital, ICU type, type of patient cubicle).

The second instrument was the NICSS, which evaluates the satisfaction of critical care patients with the nursing care received during their ICU stay.³⁰ The NICSS is a self-reported 49-item scale comprising four factors: *F1 Holistic Care* (physical and emotional aspects), *F2 Communication Modes* (verbal and nonverbal), *F3 Professional Behaviours*, and *F4 Consequences* (the patient's experiences and feelings related to the nursing care received). The first three factors, which offer descriptions of the nurse's care actions, have a total of 37 items (F1: 20, F2:6, F3:11). The fourth factor has 12 items. Responses are on a six-point Likert scale (1 = strongly disagree to 6 = strongly agree). In Factor 4, there are three items (44, 48, and 49) formulated positively but expressing an unfavourable opinion; therefore, the scoring is reversed. NICSS scores are obtained by averaging applicable items. The ranges of clinical significance for the NICSS scores are 1–3.5 (dissatisfied) and >3.5–6 (satisfied).

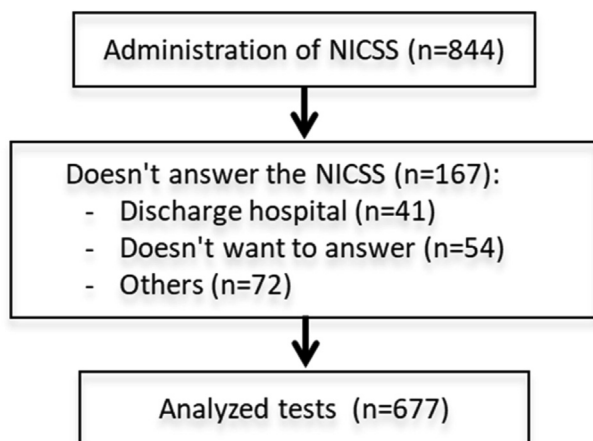


Figure 1. Analysed tests.

As shown in previous phases of the study (Romero-Garcia et al., 2018)³⁰, the NICSS has high reliability, with values above 0.95. The intraclass correlation coefficient for the total scale was 0.83, indicating good temporal stability. Construct validity showed good fit and four-factor structure, according to the theoretical model. The validity of the criterion showed a correlation between moderate and high (range: 0.46 to 0.57).^{30,31}

2.5. Ethical considerations

The study was authorised by the management of the participating centres and the Clinical Research Ethics Committee (n°2018/7818/l) of the lead hospital and by the ethics committees of the other hospitals, in accordance with Eisner's recommendations (1998). Participants' confidentiality was maintained. Each participant was assigned an alphanumeric code. Participation was voluntary, and subjects could withdraw at any time.

2.6. Data analysis

Batbaatar et al.³ show that the percentage of satisfied people is higher than 80%, so this proportion was used as a reference to calculate the sample size. A sample of 665 individuals was sufficient to estimate, with a confidence of 95% and a precision of 0.034 percentage units, a population percentage that is expected to be around 80%. We expected a dropout rate of 20%.

Frequencies, percentages, and measures of central tendency and dispersion were obtained. We calculated satisfaction levels overall and by factor. The descriptive values of each of the items that make up the scale were calculated, distributed by factors, and categorised into two categories: dissatisfied and satisfied.

To analyse the relationship between patient satisfaction and sociodemographic, clinical, and organisational variables, we conducted a bivariate analysis. We compared the overall mean score and the score for each factor according to age, sex, marital status, education level, length of stay, hours of invasive mechanical ventilation, perceived health status, and perceived degree of recovery. We used the nonparametric Wilcoxon–Mann–Whitney test to compare two independent groups and the nonparametric Kruskal–Wallis test to compare more than two independent groups. Finally, to examine the relationship between the mean score of the NICSS and the perception of the degree of recovery and the perception of health status, the Spearman correlation test was used. Multivariate linear regression analysis was carried out to examine satisfaction with nursing care. The logistic regression model was based on previously published research and included the variables age, sex, perceived degree of recovery, and the type of ICU.^{18,37} All tests of significance were two-tailed, and statistical significance was defined as $p < 0.05$, unless otherwise stated. The data processing and analysis was performed with the statistics package R version 3.1.2 for Windows.

3. Results

The average age of participants ($n = 677$) was 59.7 years (standard deviation: 16.1 years), and 62.8% of them ($n = 426$) were men. Table 1 shows selected sociodemographic and clinical characteristics of the study participants (See Fig. 1).

3.1. Satisfaction levels

The mean score of the NICSS items was 5.66 (SD: 0.68) out of 6. Table 2 presents the results of the satisfaction levels obtained in each of the NICSS items, grouped into two categories: dissatisfied and satisfied.

Table 1
Demographic and clinical characteristics ($n = 677$).

	n (%)
Age, mean (SD)	59.7 (15.7)
Sex	Male 426 (62.9%)
Marital status	Married 404 (59.7%)
	Cohabiting 49 (7.2%)
	Single 101 (14.9%)
	Separated 22 (3.3%)
	Divorced 40 (5.9%)
	Widowed 61 (9%)
Level of education	None 91 (13.4%)
	Primary education 239 (35.3%)
	Secondary education 252 (37.2%)
	University 95 (14%)
Length of ICU stay (days), median [Q1; Q3]	4.0 (2.0–7.0)
Hours of invasive mechanical ventilation, median [Q1; Q3]	9.0 [0.0; 48.0]
Perceived health status (1–10), median [Q1; Q3]	7.0 [5.0; 8.0]
Perceived degree of recovery (1–10), median [Q1; Q3]	8.0 [7.0; 9.0]
Level of complexity	Secondary level 346 (51.1%)
	Tertiary level 331 (48.9%)
Type of hospital	Public 569 (84.0%)
	Private 108 (16.0%)
Type of ICU	Polyvalent 564 (83.3%)
	Specialised 113 (16.7%)
Type of patient cubicle	Open 153 (22.6%)
	Closed, single occupancy 487 (71.9%)
	Closed, double occupancy 37 (5.5%)

ICU, intensive care unit; SD, standard deviation.

Overall scores for each factor were very high, although *F4 Consequences* had a slightly lower average. In *F1 Holistic Care*, the items with the highest proportion of satisfied participants were (6) ensured that I was not in pain, (7) gave my medication on time, (12) gave continued care, (32) looked after me in a kindly way, (19) were concerned for my comfort, and (15) made sure that I was kept clean. In relation to *F2 Communication Modes*, the items with the highest proportion of satisfied participants were for (1) introduced him/herself, (25) answered questions, (30) looked at me when they walked in, and (26) worked with a smile. From *F3 Professional Behaviours*, the items with the highest proportion of satisfied participants were (1) worked in a team, (31) the treatment was personal, (5) had a professional attitude, and (35) the care helped me recover. Finally, for *F4 Consequences*, the items with the highest proportions of satisfied patients were (42) cared for by efficient nurses, (45) grateful, (44) like a number, an object, and (47) with a desire to continue living. (As explained in the Data collection, item 44 is a negative opinion, so scoring is reversed; participants marking 1, 2, or 3 for this item were classified as satisfied).

For all items, the proportion of patients who were satisfied was very high. However, for each factor, we can point out some items with a slightly lower proportion. Within *F1 Holistic Care*, the items with the lowest proportion of satisfied patients were the (24) knew how to put themselves in my shoes and (16) respected my sleep and rest. In relation to *F2 Communication Modes*, the items with the lowest proportion of satisfied patients were (20) explained what they were going to do and (33) helped me communicate. In *F3 Professional Behaviours*, the items with the lowest proportion of satisfied patients were (28) anticipated the care that I needed and (2) assisted me quickly. Finally, for the *F4 Consequences*, the items with the lowest proportion of satisfied patients were (42) in the nurse's hands, (40) they valued my opinion, and (38) optimistic.

Table 2
Satisfaction in each NICSS item, according to response category (dissatisfied or satisfied).

Content of the summarised items	Dissatisfied n (%)	Satisfied n (%)	Mean (SD)
F1. Holistic Care			5.68 (0.65)
Item 6. Ensured that I was not in pain	4 (0.60%)	673 (99.40%)	5.78 (0.53)
Item 7. Gave my medication on time	3 (0.45%)	674 (99.55%)	5.79 (0.51)
Item 8. Listened	8 (1.19%)	669 (98.81%)	5.71 (0.63)
Item 12. Gave continued care	3 (0.45%)	674 (99.55%)	5.77 (0.52)
Item 14. Paid attention to me	43 (6.36%)	634 (93.64%)	5.64 (0.68)
Item 15. Made sure that I was kept clean	27 (3.99%)	650 (96.01%)	5.74 (0.59)
Item 16. Respected my sleep and rest	42 (6.21%)	635 (93.79%)	5.34 (1.04)
Item 17. Treated my injuries well	6 (0.89%)	671 (99.11%)	5.72 (0.60)
Item 18. Moved me when I need it	8 (1.19%)	669 (98.81%)	5.68 (0.64)
Item 19. Were concerned for my comfort	22 (3.25%)	655 (96.75%)	5.73 (0.58)
Item 21. Maintained a relationship of trust	37 (5.47%)	640 (94.53%)	5.66 (0.63)
Item 22. Were attentive to my needs	6 (0.89%)	671 (99.11%)	5.71 (0.59)
Item 23. Showed patience while giving care	8 (1.19%)	669 (98.81%)	5.71 (0.64)
Item 24. Knew how to put themselves in my shoes	15 (2.22%)	662 (97.78%)	5.55 (0.74)
Item 27. Provided emotional support	38 (5.61%)	639 (94.39%)	5.62 (0.71)
Item 29. Were sensitive to my suffering	7 (1.03%)	670 (98.97%)	5.61 (0.69)
Item 32. Looked after me kindly	6 (0.89%)	671 (99.11%)	5.73 (0.60)
Item 34. Saw to my needs with tact/sensitivity	22 (3.25%)	655 (96.75%)	5.72 (0.58)
Item 36. Maintained close contact	6 (0.89%)	671 (99.11%)	5.71 (0.60)
Item 37. Took care of me in a personal way	9 (1.33%)	668 (98.67%)	5.64 (0.68)
F2. Communication Modes			5.68 (0.65)
Item 1. Introduced themselves	12 (1.78%)	665 (98.22%)	5.70 (0.67)
Item 20. Explained what they were going to do	12 (1.78%)	665 (98.22%)	5.65 (0.68)
Item 25. Answered questions	22 (3.25%)	655 (96.75%)	5.70 (0.58)
Item 26. Worked with a smile	8 (1.19%)	669 (98.81%)	5.68 (0.66)
Item 30. Looked at me when they walked in	10 (1.48%)	667 (98.52%)	5.68 (0.66)
Item 33. Helped me communicate	7 (1.03%)	670 (98.97%)	5.67 (0.65)
F3. Professional Behaviours			5.71 (0.60)
Item 2. Assisted me quickly	12 (1.78%)	665 (98.22%)	5.67 (0.68)
Item 3. Demonstrated technical ability	22 (3.25%)	655 (96.75%)	5.73 (0.56)
Item 4. Knew what they had to do	8 (1.19%)	669 (98.81%)	5.72 (0.58)
Item 5. Had a professional attitude	6 (0.89%)	671 (99.11%)	5.75 (0.56)
Item 9. Knew what to do	20 (2.96%)	657 (97.04%)	5.72 (0.54)
Item 10. Worked in a team	16 (2.36%)	661 (97.64%)	5.75 (0.53)
Item 11. Solved problems	5 (0.75%)	672 (99.25%)	5.72 (0.58)
Item 13. Showed that they enjoyed their work	7 (1.03%)	670 (98.97%)	5.72 (0.60)
Item 28. Anticipated the care needed	18 (2.66%)	659 (97.34%)	5.50 (0.79)
Item 31. The treatment was personal	15 (2.22%)	662 (97.78%)	5.77 (0.51)
Item 35. The care helped me to recover	16 (2.36%)	661 (97.64%)	5.74 (0.54)
F4. Consequences			5.59 (0.79)
Item 38. Optimistic	21 (3.11%)	656 (96.89%)	5.44 (0.84)
Item 39. Calm	21 (3.10%)	656 (96.90%)	5.53 (0.83)
Item 40. They valued my opinion	24 (3.55%)	653 (96.45%)	5.43 (0.87)
Item 41. Good	7 (1.03%)	670 (98.97%)	5.63 (0.66)
Item 42. In the nurse's hands	35 (5.16%)	642 (94.84%)	5.41 (1.07)
Item 43. Cared for by efficient nurses	8 (1.19%)	669 (98.81%)	5.72 (0.61)
Item 44. Like a number, an object	23 (3.39%)	654 (96.61%)	5.68 (0.78)
Item 45. Grateful	23 (3.39%)	654 (96.61%)	5.69 (0.67)
Item 46. Physically secure	18 (2.66%)	659 (97.34%)	5.57 (0.77)
Item 47. With a desire to keep living	13 (1.92%)	664 (98.08%)	5.67 (0.72)
Item 48. Alone	26 (3.85%)	651 (96.15%)	5.63 (0.79)
Item 49. Unattended	11 (1.63%)	666 (98.37%)	5.72 (0.67)
Total NICSS			5.66 (0.68)

NICSS, Nursing Intensive Care Satisfaction Scale; SD, standard deviation.

The ranges of clinical significance for the NICSS scores are 1–3.5 (dissatisfied) and >3.5–6 (satisfied).

3.2. Relationship between the level of satisfaction and sociodemographic, clinical, and organisational variables

Table 3 reports the relationship between sociodemographic, clinical, and organisational variables with the level of satisfaction. The variables that presented a statistically significant relationship with the level of satisfaction of the total NICSS were the hours of mechanical ventilation, perceived health status, perceived degree of recovery, hospital complexity level, hospital type, and ICU type. Concretely, patients who scored higher on the total NICSS were those who were subjected to fewer hours of mechanical ventilation, who had a higher perceived health status, who had a higher perceived degree of recovery, and who had been admitted to a

secondary level private hospital and a polyvalent ICU. In addition to these correlations with the total NICSS score, perceived health status and perceived degree of recovery also had a statistically significant relationship with each of the factors considered separately ($p < 0.01^*$).

The logistic regression model shows that age, perceived degree of recovery, and the type of ICU had a statistically significant relationship to patient satisfaction for some factors and/or for the total NICSS score. For *F1 Holistic Care*, age, perceived degree of recovery, and the type of ICU were significant. For *F2 Communication Modes*, *F3 Professional Behaviours*, *F4 Consequences*, and *NICSS total*, the perceived degree of recovery and type of ICU had a statistically significant relationship to patient satisfaction (Table 4).

Table 3
Relationship between the level of overall satisfaction and sociodemographic, clinical, and organisational variables.

Total NICSS		N	Median [Q1; Q3]	p-value		
Sex	Male	426	284 [265; 293]	0.359		
Age	18–50 years	163	281 [262; 291]	0.553		
	51–62 years	173	286 [262; 292]			
	63–72 years	168	284 [272; 292]			
	73–90 years	173	282 [269; 293]			
Marital status	Married	404	284 [269; 292]	0.146		
	Cohabiting	49	282 [262; 291]			
	Single	101	280 [260; 289]			
	Separated	22	286 [278; 294]			
	Divorced	40	283 [264; 293]			
	Widowed	61	285 [272; 293]			
Level of education	None	91	280 [265; 292]	0.994		
	Primary education	239	283 [268; 292]			
	Secondary education	252	285 [262; 292]			
	University	95	284 [271; 291]			
Level of complexity	Level II	346	285 [271; 293]	0.002*		
	Level III	331	282 [262; 291]			
Type of hospital	Public	569	283 [265; 291]	0.005*		
	Private	108	288 [273; 294]			
Type of ICU	Polyvalent	564	284 [269; 293]	0.004*		
	Specialised	113	281 [254; 289]			
Type of patient cubicle	Open	153	280 [263; 291]	0.053		
	Closed, single occupancy	487	285 [268; 293]			
	Closed, double occupancy	37	285 [260; 293]			
					r	p
Length of stay in ICU (days)		677	4 [2; 7]	–0.05		0.240
Hours of mechanical ventilation		677	9 [0; 48]	–0.11		0.034*
Perceived health status (1–10)		677	7 [5; 8]	0.16		<0.01*
Perceived degree of recovery (1–10)		677	8 [7; 9]	0.16		<0.01*

NICSS, Nursing Intensive Care Satisfaction Scale.

The NICSS has been used as a quantitative value that ranges between 49 and 294.

*p < 0.05; r = Spearman.

4. Discussion

4.1. Satisfaction level

The results of this study reveal that critical patients had very high levels of satisfaction with the nursing care received during their stay in the ICU. These results coincide with those of other research in which different instruments were used to assess satisfaction^{3,4} and in which the same instrument was used.³⁷ One explanation for elevated satisfaction levels may be social desirability bias, in which study participants give socially acceptable responses either as a result of continued use of different services or as the tendency to agree and respond positively.⁴ Several authors have suggested that fear of retaliation from negative responses may be the cause of the trend towards more favourable scores.³⁸

Our study confirms the link between patient satisfaction and nursing actions identified in previous research. The link to pain management (item 6) has appeared in several studies.^{37,39,40} Both Ayyub et al.⁴¹ and Romero-García et al.³⁷ found links between patient satisfaction and timely administration of medication (item 7), the nurse's knowledge of how to proceed (item 9), the nurse's attentiveness (item 22), the nurse's emotional support (item 27), the nurse's ability to help the patient feel good (item 41), the nurse's concern for the patient's comfort (item 19), the relationship of trust (item 21), the nurse's paying attention to the patient (item 14), and the patient's desire to keep living (item 47).^{37,41} As seen in other studies, patients highly valued receiving personal treatment from their nurse (item 31).^{37,42}

The importance of technical skills (items 4 and 5) is also reflected in the literature.^{12,37,42} Some authors show that technically more proficient care (item 3) may play an important role in

increasing patient satisfaction.^{35,43,44} At the same time, care that lacks a human touch produces dissatisfaction in patients.^{33,45} On the other hand, pain management (item 6),^{39,40} kind nursing care (item 32), and interpersonal care increase satisfaction.^{4,35,41,43}

Notably, high patient satisfaction is an indicator of high-quality nursing, which translates into a decrease in the average hospital stay and mortality, producing a decrease in costs.^{46,47} For most of our sample, the nurse-to-patient ratio was 1:2, which means that each nurse was responsible for two patients. Previous studies have found that a higher ratio of patients per nurse was associated with lower satisfaction and more negative health outcomes.^{14,46}

4.2. Sociodemographic, clinical, and organisational variables

The relationship of the variables analysed in terms of hours of invasive mechanical ventilation, perceived health status, perceived degree of recovery, level of complexity (secondary vs. tertiary), type of hospital (private vs. public), and the type of ICU (polyvalent vs. specialised) presented statistically significant differences. These results coincide with those of the study conducted by Rajabpour et al.³⁴ in terms of hospital type. The fact that patients with higher satisfaction were those who were subjected to fewer hours on mechanical ventilation, who had higher perceived health status, who had a higher degree of perceived recovery, and who were treated at polyvalent ICUs of secondary level private hospitals may be explained by the less severe medical situation of patients in these circumstances.

Age, sex, marital status, level of education, and length of ICU stay did not present statistically significant differences in relation to total patient satisfaction, as also shown in the review conducted by Batbaatar et al.³ In addition, the results of our study coincide with those of other studies, in which there were no statistically significant differences between the overall level of

Table 4
Logistic regression models by factor and total NICSS.

Predictors	Estimates	CI	p-value
F1. Holistic Care			
Intercept	106.72	103.61–109.83	<0.001
Standardised age (years)	0.79	0.13–1.46	0.020*
Sex: male vs. female	0.74	–0.63–2.12	0.289
Perceived degree of recovery	0.95	0.56–1.34	<0.001*
Specialised vs. polyvalent ICU	–3.05	–4.82––1.28	0.001*
Observations	676		
R2/R2 adjusted	0.055/0.049		
F2. Communication Modes			
Intercept	31.99	31.00–32.97	<0.001
Standardised age (years)	0.18	–0.03–0.40	0.087
Sex: male vs. female	0.19	–0.25–0.62	0.401
Perceived degree of recovery	0.29	0.17–0.41	<0.001*
Specialised vs. polyvalent ICU	–0.72	–1.29––0.16	0.011*
Observations	676		
R2/R2 adjusted	0.042/0.037		
F3. Professional Behaviours			
Intercept	58.84	57.26–60.42	<0.001
Standardised age (years)	0.27	–0.07–0.61	0.122
Sex: male vs. female	0.06	–0.64–0.76	0.869
Perceived degree of recovery	0.56	0.37–0.76	<0.001*
Specialised vs. polyvalent ICU	–1.60	–2.50––0.70	0.001*
Observations	676		
R2/R2 adjusted	0.063/0.058		
F4. Consequences			
Intercept	63.12	61.03–65.20	<0.001
Standardised age (years)	0.27	–0.18–0.71	0.241
Sex: male vs. female	–0.46	–1.38–0.46	0.326
Perceived degree of recovery	0.60	0.34–0.86	<0.001*
Specialised vs. polyvalent ICU	–2.30	–3.48––1.11	<0.001*
Observations	677		
R2/R2 adjusted	0.053/0.048		
Total NICSS			
Intercept	259.94	252.70–267.18	<0.001
Standardised age (years)	1.19	–0.36–2.75	0.131
Sex: male vs. female	0.61	–2.58–3.81	0.707
Perceived degree of recovery	2.28	1.38–3.18	<0.001*
Specialised vs. polyvalent ICU	–7.09	–11.22––2.97	0.001*
Observations	676		
R2/R2 adjusted	0.053/0.047		

NICSS, Nursing Intensive Care Satisfaction Scale.

*p < 0.05.

satisfaction and age,^{17,33,48} sex,^{14,17,48} marital status,¹⁷ education level,^{17,48} length of ICU stay,¹⁷ and the type of patient cubicle.³³ Unlike in our study, other studies show that patients reporting higher satisfaction are those that are older,^{14,35} have less education,^{14,34} and/or have a shorter ICU stay.³³

Our results coincide with those of other authors who show a statistically significant correlation between, on the one hand, patient satisfaction, and, on the other, perceived health status^{14,17} and perceived degree of recovery.¹⁷ While other studies found a significant relationship between patient satisfaction and cubicle type,^{40,49,50} we did not. Finally, the logistic regression model shows that the variables that predict satisfaction for individual factors and/or for the total NICSS are age, degree of recovery, and the type of ICU.

Although the NICSS scores are high, there is still room for improvement, and this study makes it possible to identify priorities. Ongoing use of the NICSS could provide baseline data for improving nursing management and the quality of care. For example, patients' need for rest (item 16) could be better addressed through dimmable lighting, noise detectors, and the consolidation of nighttime care into shorter periods to minimise interruptions.^{51,52}

4.3. Limitations

This study has several limitations. There may be a survival bias because patients who died could obviously not be included in the study. It is also possible that dissatisfied patients opted not to participate in the study. The lack of variability in the responses (observed in the concentration of responses in the highest scores of the items and dimensions) meant that we did not have a wide range of data for analysis covering all potential scores. High scores may reflect social desirability.

5. Conclusion

Critical patients presented very high levels of satisfaction with the nursing care received during their stay in the ICU for the total scale and for each of the factors. The sociodemographic variables of the study sample did not present statistically significant relationships with the mean score in any of the subgroups. Previous studies showed that patient satisfaction is related to the perception of health status and the perception of the degree of recovery. We confirm these findings and show that patient satisfaction is also correlated with the hours of mechanical ventilation, hospital complexity, hospital type, and ICU type. These findings should be considered not only in clinical practice but also in ICU planning and management because they highlight areas for improvement.

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CRediT authorship contribution statement

Pilar Delgado-Hito: Conceptualisation, Methodology, Supervision, Project administration, Formal analysis, Writing the original draft, Writing the review and editing.

Isidro Alcalá-Jimenez: Methodology, Data curation, Software, Writing the review and editing.

María Antonia Martínez-Momblán: Writing, review and editing.

Laura de la Cueva-Ariza: Writing review and editing.

Jordi Adamuz: Writing, review and editing.

Cecilia Cuzco: Writing, review and editing.

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Conflict of interest

None.

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